



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

D-1538

Applicant : Mitsuru Kogami
Title : LOCK MECHANISM AND OPENING-CLOSING DEVICE
Serial No. : 10/721,089
Filed : November 26, 2003
Group Art Unit : 3676
Examiner : Christopher J. Boswell

Hon. Commissioner for Patents
P.O. Box 1450, Alexandria, VA 22313-1450

07/01/2005 SFELEKE1 00000051 10721089

June 30, 2005

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APPEAL BRIEF

Sir:

This is an appeal from the final rejection of the Examiner dated January 19, 2005. A credit card authorization form in the amount of \$500.00 is attached herewith for the appeal brief fee.

REAL PARTY IN INTEREST

The applicant is the real party in interest.

RELATED APPEALS AND INTERFERENCES

There are no related appeals or interferences.

STATUS OF CLAIMS

Claims 3 and 4 have been cancelled. Claims 1, 2, and 5-11 were (i) finally rejected in their respective forms preceding the Amendment After Final Action of March 24, 2005, and (ii) permitted

to be entered in amended form pursuant to an Advisory Action of April 20, 2005.

Accordingly, claims 1, 2 and 5-11, as reproduced in the Claims Appendix hereof in their entirety, are all of the claims currently pending and at issue.

STATUS OF AMENDMENT

Claims 1, 2 and 5-11 were *finally rejected* in the final Action of January 19, 2005. In response, Applicant filed an Amendment After Final Action on March 24, 2005. In the foregoing Amendment After Final Action, Applicant amended claims 9 and 10.

The Examiner permitted entry of the foregoing claim amendments for appeal purposes in an Advisory Action dated April 20, 2005. Accordingly, claims 1, 2 and 5-11, as reproduced in the Claim Appendix, are currently pending and at issue.

Applicant respectfully requests that the following arguments be reviewed in light of the foregoing claim amendments, noting that with respect to newly amended claim 9, Applicant presently argues the merits based upon the Examiner's prior positions in relation to the cited references.

SUMMARY OF CLAIMED SUBJECT MATTER

The claimed invention relates to a lock mechanism for locking a movable member relative to a base member against an applied force. Referring to Applicant's Fig. 1, the moveable member 2 may be, for example, a front panel, cover or door covering an ash tray 10a and lighter insertion hole 10b mounted on a base member 1. The base member 1 may be, for example, attached to the center console C (Fig. 4(a)) of a car. The locking mechanism is a push-lock and push-open type mechanism, where upon the first push, the moveable member 2 and base member 1 are locked together, and upon a second push, the moveable member 2 and base member 1 are unlocked from each other.

Referring to the described prior art of Fig. 8(c), an

exemplary push-lock and push-open type locking mechanisms may include (i) a swing member 60 including a pin 61, on a moveable member, and (ii) a cam 50 forming a groove 51 between its inner edge and a projection 52, on a base (non-moving) member. (specification, p.1, 1.25 - p.3, 1.12)

When the swing member is initially pushed inward (leftward), for example by an individual applying a force, the pin 61 is guided along guide groove 51a to guide groove 51b. When this external force is released, the pin 61 moves outward (rightward) to the engagement groove 51c by the retraction force of an internally applied force, referred to as an urging means in the specification.

When the swing member is pushed inward (leftward) a second time, again for example by an individual applying a force, the pin 61 is guided from engagement groove 51c to guide groove 51d. When this external force is released, the pin 61 moves outward (rightward) along return groove 51e by the retraction force of the aforementioned internally applied force.

Where, as in Fig. 8(c), the swing member 60 is provided on the movable member, and the cam 50 is provided on the base member, a number of problems may arise. The swing member 60 may require support while it is in motion. Also, the weight of the swing member 60 may cause the locking mechanism to malfunction. For example, upon the second aforementioned pushing inward (leftward) motion of the swing member 60, the weight of the swing member 60, itself, may cause the pin 61 to descend from engagement groove 51c back outward and downward to guide groove 51b, and then back outward and downward along guide groove 51a, instead of the desired course along guide groove 51d and return groove 51e. Compensating for the problem may also be difficult as well, because the relative position of the base member and moveable member may vary depending upon the application. (specification, p.3, 1.26 - p.4, 1.16)

Referring to Applicant's exemplary embodiment of Figs. 5(a), 5(b), 7(a) and 7(b), the base member has a cam 7 including a swing groove 31. Swing groove 31 includes a guide groove for introduction 31a extending in right and left directions, a guide groove for engagement 31b, a guide groove for release 31d, an engagement

groove 31c, a return groove 31e, and a shelter groove 31f. Movable member 2 includes a swing member 9, and a pin 9a enabled to move along swing groove 31.

When movable member 2 is in the open position, pin 9a of swing member 9 is positioned in shelter groove 31f. When movable member 2 is pushed downward, for example by a downward force exerted by an individual, urging means 5 provides an opposing resistance. The swing member 9 will gradually change position from a steep inclined state (Fig. 4(b)) to a horizontal state (Figs. 5(a) and 5(b)). With enough applied force, the resistance of the urging means 5 is overcome, as pin 9a moves from the shelter groove 31f to the guide groove 31a, and subsequently to the guide groove 31b.

In the present embodiments, an additional auxiliary force is applied by a swing member 8. Referring to Fig. 5(a), as pin 9a reaches the portion of groove 31 slightly before the guide groove 31b, the edge of the depressed portion 9c (Fig. 7(b)) elastically contacts the corresponding portion of the spring member 8. Accordingly, the swing member 9 receives a contacting force from the spring member 8. This contacting force may gradually increase until the pin 9a reaches the guide groove 31b. The force will thereby prevent swing member 9 from moving downward because of its own weight, noted above as a disadvantage of the acknowledged prior art. (specification, p.17, 1.1 - p.18, 1.9)

When the foregoing force on swing member 9 is released, as for example when the individual stops pushing down the movable member 2, the force of the urging means causes pin 9a into engagement groove 31c. This is the locking position.

When movable member 2 is to switch to the open position, the movable member 2 is again pushed and released, so that the pin 9a enters the guide groove 31d from the engagement groove 31c and returns to the shelter groove 31f through the return groove 31e from the guide groove 31d. Accordingly, the movable member 2 automatically rotates to switch to the open position by the force of the urging means 5.

Here, while pin 9a reaches guide groove 31d through the engagement groove 31c, the edge of the depressed portion 9c of the

swing member 9 elastically contacts the corresponding portion of the spring member 8 and receives the contacting force of the spring member 8. The contacting force is released when the pin 9a moves to the return groove 31e from the guide groove 31d. (specification, p.18, ll.10-24)

One or more of the foregoing inventive concepts are set forth in independent claims 1 and 9. In particular, these claims set forth "a spring member as auxiliary means provided on the base member," to recite certain limitations associated with an exemplary swing member 8 described in the disclosed embodiments.

Claim 2, depending from claim 1, additionally sets forth recitations directed to urging means which urges the movable member relative to the base member. (specification, p.12, l.14-20, p.16, l.9, p.17, l.6)

Claim 5, depending from claim 1, additionally sets forth recitations directed to the relationship between the downward force of the spring member on the swing member and the momentum applied to the swing member downwardly (specification, p.17, l.26-30)

Claim 6, depending from claim 5, additionally sets forth recitations directed to the relative positioning of the cam and the spring member. (specification, p.11, l.15-25)

Claim 7, depending from claim 2, additionally sets forth recitations directed to the closing of an opening of the base member by the moveable member, opening of the same, and the arrangement of the cam. (specification, p.11, l.16-24)

Claim 8, depending from claim 7, additionally sets forth recitations directed to relationship between the arms, the base member and the moveable member, and additional corresponding features. (specification, p.10, ll.9-27, p.16, l.6-19)

Claim 10, depending from claim 9, additionally sets forth recitations directed to the relationship between the spring member, the base member and the swing member. (specification, p.1, l.9 - p.12, l.14, p.17, l.12-19)

Claim 11, depending from claim 9, additionally sets forth recitations directed to the shape and position of the spring member. (specification, p.11, l.5-13)

GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL

(1) Claim 10 was rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

(2) Claims 1, 2, 5-7 and 9-11 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 3,156,493 to Griffiths (hereinafter "Griffiths").

(3) Claim 8 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Griffiths in view of U.S. Patent No. 5,050,922 to Falcoff (hereinafter "Falcoff").

ARGUMENT

Claim 10 was rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

Referring to Examiner's position in the Final Office Action, it is acknowledged that the specification discloses that the spring member 8 may apply a force to the swing member 9 when the pin 9a is engaged with the cam member 7 in various directions, depending on the angle at which the swing member 9 contacts the spring member 8. However, the Examiner asserts that the force exerted is not limited to the oblique direction.

Claim 10, in its previous form, recited that "the spring member contacts the swing member to urge obliquely *only* when the pin engages the cam." (emphasis added) In context, the word "only" modifies what causes the swing member to be urged obliquely, namely "when the pin engages the cam," and does not limit the direction to the oblique direction, such that the claim is not enabled by Applicant's disclosure.

Nevertheless, the rejection is rendered moot as claim 10 has been amended to delete the word "only."

Claims 1, 2, 5-7 and 9-11 were rejected under 35 U.S.C. § 102(e) as being anticipated by Griffiths. The rejection is respectfully traversed.

Griffiths discloses a push button fastener. Referring to Griffiths' Fig. 1, a guide rod 90 is disposed in a frame 92, and a housing 94. Housing 94 includes cam elements 101 (a groove), 102 (a solid portion) that are slidably engaged with guide rod 90.

A plunger 98 slidably passes through a projecting arm 91 of the frame 92, through opening 96. A crosspin 100 is secured at the left end of the plunger 98 to cooperate with cam elements 101, 102. The cross pin 100 traces along the cam elements 101 and 102.

A compressive spring 106 is disposed between frame section 91 and a retaining washer 108, providing a rightward urging force on plunger 98 opposing an externally applied leftward pushing force on plunger 98.

Griffiths fails to anticipate Applicant's claims 1 and 9. Taking the most logical conceivable construction, (i) cam elements 101, 102 correspond to the claimed cam, (ii) plunger 98 corresponds to the claimed swing member, (iii) spring 106 corresponds to the claimed spring member, and (iv) crosspin 100 corresponds to the claimed pin of the swing member.

As recited in Applicant's claims 1 and 9, Applicant's cam is fixed on the base member, not on the movable member. However, Griffiths' cam is movable along guide 90 inside its frame 92, perhaps the only item in Griffiths that may be conceived of as analogous to Applicant's base member. Accordingly, Griffiths' cam is not fixed to its base member, as presently claimed by Applicant, but is rather movable within its base member.

On the other hand, even if housing 94, instead of frame 92, were taken as the base member, Griffiths would not anticipate claims 1 and 9. Claims 1 and 9 require that the spring member be provided on the base member. Taking compressible spring 106 as Applicant's claimed spring member, the device is not provided on either Griffiths' housing 94 or frame 92, but rather completely outside of these elements.

Claims 1 and 9 also require that the spring member be located adjacent to the cam. In addition, the claims require that the cam be fixed on the base member, and that the spring member also be provided on the base member. Again, taking compressible spring 106

as Applicant's claimed spring member, the device is not adjacent to, meaning near or next to, the cam. In fact, Griffiths' spring member 106 is completely outside of Griffiths' housing 94 and frame 92.

Applicant's claims 1 and 9 also recite a swing member having a tip and a pin close to the tip for tracing a swing groove. If Griffiths' crosspin 100 is taken as Applicant's pin, then the left end of plunger 98 should be reasonably taken for Applicant's claimed tip of the swing member. However, in this construction Griffiths' spring member 106 cannot possibly contact the tip of plunger 98, which must be construed as the swing member, as required by claims 1 and 9.

Perhaps for the foregoing reason, the Examiner takes retaining washer 108 as the tip of plunger 98. However, in this construction, the tip would not be close to the pin, as claimed, but in fact completely outside of the Griffiths' cam 101, 102, and even on the other side of Griffiths' base, which may be reasonably construed only as frame 92 or housing 94. In fact, in this construction, the tip of swing member 98 would actually be closer to the opposite end of plunger 98, construed as the claimed swing member, from the end having crosspin 100.

Also, with reference to the foregoing construction, the relevant claim phrase states that the "spring member . . . contact[s] the tip of the swing member when the swing member is moved close to the projection, to thereby urge the swing member from one side of the projection toward the other side of the projection." (emphases added) In Griffiths, however, spring 106 continuously contacts retaining washer 108. There is simply no causal relation between spring 106 contacting the tip of plunger 98, presently construed as retaining washer 108, and plunger 98 being moved close to projection portion 102 of the cam.

Since claims 2 and 5-7 depend from claim 1, and claims 10, 11 depend from claim 9, claims 2, 5-7, 10 and 11 are allowable for at least the foregoing reasons, and the foregoing arguments are incorporated herein.

In addition, with reference to claim 2, the Examiner takes the

spring 95 disposed around guide rod 90 as the claimed urging means. Claim 2 sets forth that the urging means urges the *movable member* relative to the *base member*. As it depends from claim 1, and in light of the foregoing discussion, claim 2 requires that the plunger 98 comprises the moveable member. However, spring 95 provides an urging force on housing 94, which as described may only be construed as the base member, not on plunger 98, which may only be reasonably construed as the claimed swing member provided on a movable member. In other words, any urging force provided by spring 95 could only be imposed on the base member, not on the moveable member as claimed.

Claim 5, also depending from claim 1, recites that the spring member contacts the swing member with a larger force than the downward momentum applied to the swing member. For Griffiths to anticipate, the reference would have to teach that spring 106 contacts retaining washer 108 of plunger 98 with a larger force than the downward momentum applied to plunger 98. There is simply no such disclosure in the reference.

Claim 6, depending from claim 5, recites that the cam is arranged to face laterally so that the spring member pushes the swing member upwardly. However, the claim is not anticipated, because when Griffiths' cam faces laterally, as pictured, spring 106 pushes plunger 98 in a rightward direction, not upward.

Claim 7, also depending from claim 2, recites that the movable member may be switched between a first position where the movable member closes an opening of the base member and a second position where the opening is opened. For Griffiths to anticipate, the reference would have to teach that plunger 98 may be switched between a first position where the plunger 98 closes opening 96 (or some other opening) of frame section 91 and a second position where this opening is opened. There is no such disclosure in the reference.

In addition to the recitation of claim 1, independent claim 9 recites that the spring member is arranged such that when the pin does not engage the cam, the spring member does not contact the swing member. However, in Griffiths since the spring 106 is disposed

around the plunger 98, the spring 106 always contacts the plunger 98 regardless of the engagement and disengagement of the crosspin 100 with the cam 101, 102. Because Griffiths' pin always engages the cam, the foregoing claim recitation cannot possibly be met by the reference's teaching.

Claim 10, depending from claim 9, recites that the spring member is attached to the base member at a side away from the swing member, so that the spring member contacts the swing member to urge it obliquely when the pin engages the cam. As noted, in Griffiths, the spring 106 is not attached to anything that may be construed as a base member, including frame 92 or housing 94, and the claim is not anticipated.

Claim 11, depending from claim 10, recites that the spring member is a linear or plate spring and is arranged in an inclined state relative to the base member. As Griffiths' Fig. 1 illustrates, spring 106 is not inclined relative to anything that may be construed as a base member, including frame 92 or housing 94.

Claim 8 stands rejected under 35 U.S.C. § 103(a) as being unpatentable over Griffiths in view of Falcoff.

Since claim 8 depends from claim 7, which depends from claim 2, which in turn depends from claim 1, the claim is allowable for at least the foregoing reasons for which claims 1, 2 and 7 are allowable.

With respect to claim 8, either Falcoff, or Griffiths and Falcoff taken together, would have to provide the missing claim recitation of arms rotatably attached to side walls of the base member, a movable member being rotatably attached to the arms, a plate extending downwardly therefrom and moving along grooves formed on the side walls, with the plate being pivotally connected to the swing member.

Falcoff discloses an overhead console having a pivotable storage shelf-door. In Figs. 1 and 2 in Falcoff, an overhead console 5 includes a wall structure 30 with an opening and a door 80 for closing the opening. The door 80 is provided with a catch 120 comprising a slot 125 defined by a recess 130 and a cam 135

with a notch 145. A spring detent 115 is attached to the wall structure 30 for engaging the notch 145 when the door 80 is closed and locked.

In the present invention, the cam and the spring member are claimed to be provided on the base member, and the swing member is claimed to be provided on the movable member. In Falcoff, however, the cam 135 is provided on the door 80, which is a movable member, and the spring detent 115 is provided on the wall structure 30, which is a base member. No suggestion or motivation is provided by Falcoff to provide the cam on the base member, or the spring detent on the moveable member.

In addition, there is no disclosure, suggestion, or motivation in Falcoff, of a spring member contacting a swing member while the pin is tracing a swing groove, as presently claimed.

As noted, Applicant's claimed invention solves problems associated with a swing member provided on a moveable member, and a cam provided on a base member. Other than possibly hindsight garnered from Applicant's own invention, Falcoff fails to provide a motivation to combine, particularly given that Falcoff is not directed to solving the same problem, but instead teaches a stationary swing member and a movable cam. In fact, without impermissible hindsight garnered from Applicant's own invention, neither reference separately or in combination includes a motivation to combine the references. In re Dembiczak, 175 F.3d 994, 999, 50 USPQ2d 1614, 1617 (Fed. Cir. 1999) ("Our case law makes clear that the best defense against the subtle but powerful attraction of a hindsight-based obviousness analysis is rigorous application of the requirement for a showing of the teaching or motivation to combine prior art references."). In less technologically complex cases, the very ease with which an invention may be understood may render one susceptible to the insidious effect of using the inventor's own teachings against its teacher. Id.

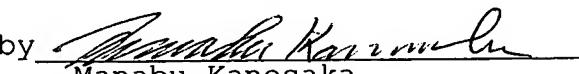
CONCLUSION

As explained above, the cited references do not disclose, suggest, or render obvious claims 1, 2 and 5-11 of the present invention.

It is respectfully requested that the decision of the Examiner to reject claims 1, 2 and 5-11 be reversed, and that claims 1, 2 and 5-11 be presently allowed.

Respectfully submitted,

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CLAIMS APPENDIX

1. A lock mechanism for locking a movable member to a base member, comprising:

a cam fixed on the base member, and having a projection with a roughly heart shape and a swing groove formed around the projection,

a swing member provided on the movable member to move laterally and vertically relative to the cam, and having a tip and a pin close to the tip for tracing the swing groove, and

a spring member as auxiliary means provided on the base member and contacting the swing member while the pin is tracing the swing groove so that the auxiliary means allows the swing member to move properly, said spring member being located adjacent to the cam and contacting the tip of the swing member when the swing member is moved close to the projection, to thereby urge the swing member from one side of the projection toward the other side of the projection.

2. A lock mechanism according to claim 1, further comprising urging means for urging the movable member relative to the base member so that the movable member is stopped at a first position through an engagement of the pin and the projection by pushing the movable member against a force of the urging means, and the engagement is released by pushing the movable member again to allow the movable member to move to a second position.

5. A lock mechanism according to claim 1, wherein said spring member contacts the swing member with a force larger than a momentum applied to the swing member downwardly.

6. A lock mechanism according to claim 5, wherein said cam is arranged to face laterally so that the spring member pushes the swing member upwardly.

7. An opening-closing device comprising said movable member, said base member, said lock mechanism, and said urging means according

to claim 2, wherein the movable member is switched between the first position where the movable member closes an opening of the base member and the second position where the opening is opened, and said cam is arranged to face laterally.

8. An opening-closing device of the movable member according to claim 7, further comprising arms rotatably attached to side walls of the base member, said movable member being rotatably attached to the arms and having a plate extending downwardly therefrom and moving along grooves formed on the side walls, said plate being pivotally connected to the swing member.

9. A lock mechanism for locking a movable member to a base member, comprising:

a cam fixed on the base member, and having a projection with a roughly heart shape and a swing groove formed around the projection,

a swing member provided on the movable member to move laterally and vertically relative to the cam, and having a tip and a pin close to the tip for tracing the swing groove, and

a spring member as auxiliary means provided on the base member and contacting the swing member while the pin is tracing the swing groove so that the auxiliary means allows the swing member to move properly, said spring member being located adjacent to the cam and contacting the tip of the swing member when the swing member is moved close to the projection, to thereby urge the swing member from one side of the projection toward the other side of the projection, wherein said spring member is arranged such that when the pin does not engage the cam, the spring member does not contact the swing member.

10. A lock mechanism according to claim 9, wherein said spring member is attached to the base member at a side away from the swing member so that the spring member contacts the swing member to urge obliquely when the pin engages the cam.

11. A lock mechanism according to claim 10, wherein said spring

member is a linear or plate spring and is arranged in an inclined state relative to the base member.

EVIDENCE APPENDIX

Additional evidence has not been applied.

RELATED PROCEEDINGS APPENDIX

There were no applicable related proceedings.